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## PATENT SPECIFICATION

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## COMPLETE SPECIFICATION

## Improvements in or relating to the Stabilization of Edible and Potable Substances against Oxidation

I, JOHAN ERNST NYROP, a Subject of the King of Denmark, of Nr 43 Eggersvej, Hellerup, Denmark, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to a method for the stabilizing against oxidation of edible or potable materials containing organic substances subject to deterioration by oxidation, especially the prevention of or suppression of oxidation processes which occur at a comparatively high redox potential. Said materials generally contain unsaturated carbon compounds such as oxidizable flavouring substances and particularly fatty substances, carotinoids, vitamins, coffee extract, chlorophyll, xanthophyll, lycopin, and hormones.

It is well known that a very great number of edible or potable materials containing constituents of the above kind are liable to undergo undesirable changes on storage due to oxidation processes taking place in the material. The various cases of such deleterious oxidative changes are too numerous to be enumerated but some very common and well known representative examples may be mentioned. Thus, fatty emulsions are liable to become rancid on lengthy storage, and they may assume a fishy or tallowy taste. If the attempt is made to concentrate or dehydrate a coffee extract by evaporation, it loses its flavour. Vegetable oils are liable to become rancid in the course of time. Butter is also deteriorated by storage, and the same applies, e.g., to bacon and fat-containing sausages and the like. Further examples of such deleterious oxidative changes are the loss of activity of preparations of vitamins and hormones on storage. In the case of fatty substances, for example peroxides and free fatty acids may be formed by the oxidation process. If lecithin is present, trimethylamine will

easily be formed which gives the substances a fishy taste. But the oxidation may also be of a different nature from that just mentioned. Thus, for example, in the case of fatty substances, oxidation may take place without peroxide or free fatty acids being formed or in any event without these substances being formed in any detectable amount.

It is known that certain naturally occurring e.g., fatty substances, often contain substances which to a certain extent protect the material against deterioration by oxidation. Generally they are not, however, able to prevent the materials from being subjected to undesirable alterations when it is stored for a lengthy period.

Furthermore it is known that some of the oxidation changes mentioned above may be counteracted by the addition of various so-called antioxidants in small quantities. A fatty substance may thus be prevented from turning rancid by the substance being mixed with certain poly-phenols and amino-phenols. Substances such as diphenyl-guanidine, triethenolamine, alkylene-diaryl-diamines have also been proposed.

Most of the antioxidants hitherto known have, however the drawback that they are poisonous or give the material to be stabilised a bad taste and smell.

A drawback in most of the antioxidants hitherto known is that their applicability is rather limited because they are only able to counteract certain oxidation processes and show activity only in certain substances and mixtures whereas they have no effect or at any rate a considerably decreased effect against other oxidation changes and in other substances and mixtures.

These drawbacks are in accordance with the invention remedied by incorporating in the edible or potable material comprising the organic substances liable to deterioration by oxidation, a small